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Traffic Problems and Distribution Costs

BY CHARLES LA FERLE

Traffic Manager, The Robert Simpson Co., Ltd., Toronto.

(Before Toronto Chapter, February 20, 1933)

BEFORE such an audience as this, I feel a deep sense of responsibility, because in accepting the invitation extended to me by your Chairman, I conceive it is my duty to deal with a subject which was definitely chosen by your Mr. Lane. I had no alternative; I was simply asked to prepare a paper covering the items outlined in your program.

I will first endeavour to discuss part of the subject in a practical way, dealing principally with the traffic administration in business, and the relative service value and the saving in dollars and cents resulting from centralizing industrial and/or commercial traffic functions, namely traffic management.

Because organized transportation is as old as civilization, and because countless persons have expressed their views, and have put into effect many practical operations, it would be idle for anyone, at this time, to claim originality.

Therefore, I can only say that my views are based upon reading, conference and experience, and to each of these I give due credit.

To prescribe a plan for the economic and efficient administration of all traffic departments would obviously be impossible. Each traffic department must be organized and systemized to the requirements of the work.

Value of the Department

The true value of an industrial and/or commercial traffic department can only be summed up by the measure of a report submitted weekly, monthly or yearly by the traffic manager to his immediate executive. This report should show the actual and estimated saving in dollars and cents, brought about through proper administration of the department.

Traffic functions are broad in scope and large in number, and it is generally recognized that the physical assembling and distributing phases of business—that is, traffic, transportation and shipping—have all too often been neglected by otherwise well managed enterprises. Without apparent justification, the cost of physical distribution (transportation) sometimes actually exceeds the cost of production. The traffic department is basic and fundamental to the elimination of industrial waste, incident to transportation, and the need of its administration cannot be measured solely by the number of employees, the number of shipments, the tonnage handled, nor the total capitalization; but by a combination of all these characteristics. The small size of a business alone does not exclude it from scientifically managing what traffic it has. For a small or large business, some of the principal fundamental functions or traffic may be grouped under four (4) general headings of administrative functions:—cost, service, physical handling and transportation.

Centralized Control

Traffic control completely centralized in a traffic department is an excellent policy, and should, at all times, be encouraged. If we are to accept this doctrine, then let us proceed a little bit further and endeavour to find out what should be the scope of a traffic manager's

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responsibility. Should his responsibility be from the moment the order for goods is placed with the manufacturer until they are on the store counter? Co-ordination is of vital importance. There are four steps between the placing of the order and the counter display—the factory, transportation, warehouse and receiving. The traffic manager should set up departmental machinery that would co-ordinate each step and ensure a steady flow of merchandise to the sales counter. Yet usually his authority or control is limited to what has hitherto been considered purely transportation routine—rates, routes and claims.

What happens when the buyer suddenly learns that the merchandise is not on the counter as anticipated? First, jump the traffic manager; he is naturally held to blame. But is he? He must check the buyer's order and query the factory. This means unnecessary loss of time and money, because if the traffic manager had been charged with the full responsibility, he would have kept constant check on the order, instead of depending on the manufacturer's promise of prompt delivery, and if the goods were not to be shipped on schedule, the traffic manager could then inform the buyer, in time to permit substitution of goods and prevent store customers from going elsewhere.

On the other hand, if goods have been shipped, the traffic manager may find them in the warehouse or receiving room, delayed by a score of fireproof alibis.

In terms of dollars and cents, the value of traffic management is a phase of business management considered necessary to the successful operation of practically all business enterprises, just as is accounting, financing and selling.

In order to do its best, the traffic department must be understood and given support. Not only is a traffic executive expected to be experienced and well informed concerning the technical practices of his work, but he is expected to have the ability to co-ordinate the relations of his department with those of the other departments.

A Technical Job

Traffic work is technical. The terminology of traffic is different from that encountered in handling other phases of business. The length of time necessary to bring about the conception of the traffic manager's job will depend entirely on how quickly a general realization, or rather, appreciation of proportional values is brought about. By this is meant a realization that every dollar saved by eliminating waste in moving commodities, has the same number of cents as has the one saved through economies in manufacturing or selling, and that the saved distribution (transportation) dollar is equally as effective in paying dividends.

One can safely say that for large concerns, the average savings, as related to the entire cost in administering the traffic department, is well over 400%. Money returns alone may justify the operation of a traffic department, but measurable results tell only part of the story. Service can seldom be measured in dollars and cents.

Four Main Uses

No one can deny the four fundamental principles supporting the creation of an industrial traffic department, as part and parcel of a general administrative body of the business it represents:—

1. That it is part of and necessary to the operation of a business.
2. That it eliminates waste and accomplishes saving, the definite measurement of which proves the department to be profitable.

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3. That it renders many valuable but unmeasurable services to all departments, which alone justify its maintenance.
4. That its value becomes evident when a comparison is made of conditions within a business prior to and following its establishment.

Traffic management is the science of restricting to minimum dimensions, that which can easily become the greatest expense factor, and consequently the factor which will actually determine whether a sale and/or purchase will be lost instead of gained. The bane of traffic management, and it is the bane of all management, is the man without a trained imagination, the man figure-blind. The truth is, we are dealing here not with problems in mathematics but with problems in economics.

You will have gathered in a general way that my topic is a discussion of ways and means of keeping the relationship between transportation cost and the purchase or selling price somewhere within reasonable bounds. There was a time when this relationship, on most commodities, was more or less stable.

Some Effects of Depression

Many things are responsible for the conditions we are talking about to-day. First, we have a general business depression, with corresponding reduction in prices. Second, some of you find it necessary to buy in smaller quantities, keeping smaller stock; all tend to require a speeding up of the order, which results in using the faster and more expensive methods of transportation. The final analysis presents a transportation cost, so out of line with the value of the goods that we sometimes doubt our senses when reviewing the figures.

We will assume that prior to the business depression, a certain commodity cost the merchant 25 cents per pound or \$25.00 per 100 pounds, and that under normal conditions he could easily order 100 pounds or more. Based on normal consumption of his stock, he could order sufficiently far in advance to profit by lower and correspondingly cheaper transportation. For ease in figuring, we will assume that his normal transportation cost on the merchandise in question is \$1.00 per 100 pounds, or 4 per cent of \$25.00. Now we come to the really depressing part in figuring this cost.

The cost of his merchandise drops 20 per cent. He not only pays \$20.00 for the goods but must, if he wants to stay in business, reduce his selling price correspondingly. Under the normal freight rate of \$1.00 per 100 pounds, his transportation increases to 5 per cent of the reduced cost of the merchandise. This seems bad enough, but unfortunately, this merchant finds that his sales have dropped so that he can order only 50 pounds at a time. On this basis, his transportation cost has jumped to 10 per cent of the cost. Now, in an effort to keep his stock down to a working basis, he doesn't order until his stock is really low. If he gets too low, he must restock quickly, which he probably does, and orders the goods shipped by express. Use your own imagination in arriving at the percentage of transportation cost to the cost of the goods as the result of changing from freight to express, even on a 50 pound shipment.

Unless careful consideration is given jointly to buying and distribution, the merchant is very apt to find himself in a very embarrassing financial position.

Types of Transportation

Let us briefly summarize the different kinds of transportation service available to the shipper.

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First we have the waterways. This is generally the cheapest and slowest method of transporting goods. Freight or rail transportation is next. Then we have a combination of the two, commonly called rail and water and generally somewhere between straight rail and water as to speed and cost. Next we have the express, parcel post, motor trucks and the air service.

The successful traffic manager is the one that can co-ordinate the various transportation facilities that are best adapted to his particular problems.

Classification of Goods

Before any attempt is made to determine the cheapest way to ship, two things are absolutely necessary in every instance. Goods must be classified and the estimated shipping weight must be determined.

Now as to classification. So frequently are the terms "Classification" and "Class Rate" used by transportation men, that the layman accepts them as part of the language of transportation, without particular regard to the exact meaning or importance in the control of transportation and shipping cost.

Correct classification does not necessarily mean describing goods by trade names. This practice is responsible for a large percentage of overcharges in freight costs. Not only should classification be checked to determine whether it is more economical to ship in bales, boxes or crates, but for other reasons as well.

There are approximately 25,000 kinds of goods offered for shipment in this country. It is estimated that there are about a hundred million rates published in the tariffs of the carriers operating in Canada and the United States. It is obvious that it would be impracticable, if not wholly impossible to make and publish individual rates on every one of the various articles shipped between all points. In order to meet this complex condition, the carriers have found it necessary to classify articles in groups, placing a large number of commodities, having transportation likenesses, in one class group and charging a certain amount per 100 pounds for the transportation of all articles in a defined group or class between any two points.

Class Rates and Commodity Rates

It may be said that the class rates apply on the general classified merchandise traffic of the carrier, and the commodity rates apply on that portion of its traffic requiring special consideration in the matter of rates, in order that it may enjoy a free commercial movement.

A commodity rate is a special individual rate applied to a certain commodity, or defined group of related commodities. Such a rate is made because of unusual conditions and volume in the transportation of the commodity.

Supply and demand, competition, desire of the carrier to increase its tonnage in a particular commodity and transportation competition are the more important elements which cause commodity rates to be made. Commodity rates are usually confined to carload quantities of the great staples and low grade commodities, to afford them general circulation in commerce. It is estimated that 75 per cent of the tonnage of the railroads of the United States and Canada moves under commodity rates.

The economic phase of classification making, it must be understood that classification is an art, not a science in itself. What I have stated has only reference to railroad transportation and not to

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the motor transport industry, which is only in its infancy at the present time.

Speed of Shipments

Probably one of the commonest mistakes made is that of considering freight service as slow. And when we become saturated with the idea, we commence to throw away money. Freight is far from slow. Fast package car service is in effect between every city of consequence.

If the order to be routed is fairly large, and is required quickly, the tendency is to order it by express. In instances of this kind the traffic manager should find out how much of it is required immediately. With this information it may be possible to have the shipper send a small portion of the order by parcel post or express, whichever is cheaper, letting the balance move the slower and cheaper way. This plan is probably the one used most often and results in considerable saving in transportation cost. It must be remembered that the department head may not be familiar with transportation facilities. He may be thinking of a previous order that did not reach him on the expected date. Some people have the habit of delaying their orders needlessly.

Wherever possible, the transportation time and cost by the different methods should be drawn to the attention of the buyer.

Cartage is a big item in any business, and must not be overlooked when making transportation cost comparisons.

If the buying department is reluctant to co-operate and places but little importance in the work of the traffic department, as happens in some cases, the traffic manager should not sit back and cuss him, but should take a record of all shipments for a month. Make a comparative statement, showing what it costs and show how much would have been saved under some orderly procedure. If that brings no response, the buyer should be approached and shown the actual dollars and cents that he is wasting through transportation operations.

Special Services

In the movement of commodities over the various transportation systems in the United States and Canada, there are many special services, allowances and privileges granted to the shipper or consignee, which have an important effect upon the rate and exert a strong influence upon successful distribution and marketing. There are more than 300 transit special privileges granted to more than 300 commodities. We have diversion, re-consignment, stop-off for partial unloading, feeding in transit, fabricating iron or steel, heated car service, dressing and treating lumber in transit, and hundreds of other privileges which are too numerous to mention.

The flow of commodities from the sources of production to the consuming markets is facilitated by the establishment of arrangements that permit the stopping off of the goods at manufacturing and commercial centres so that further manufacturing may be applied to the raw or semi-finished material to bring them nearer to their finished state. Many commodities may be moved in the way as though, from a transportation point of view, there was a single uninterrupted movement from the originating point to final destination. The stopping of the goods en route, the unloading of the cars, the further manufacturing of the materials, the reloading and reforwarding of the goods in other cars, are considered, in many cases, not as two distinct transportation movements, but as an interrupted through movement from originating point to final destination.

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Reconsignment and diversion privileges, like transit arrangements, increase the ease with which traffic in certain commodities moves from the producing districts to the markets or distribution centres.

Re-consignment, in the narrowest sense in which the term is used, is the changing of the consignee, consignor, route, or destination of a car of freight after it has been actually placed to be delivered. Diversion, on the other hand, is the term used in connection with such changes in transit before the car has been received at its original destination. Diversion involves no additional transportation service, while re-consignment does. In actual commercial and transportation practice, however, the terms are often used interchangeably.

Pool Cars

More and more shippers are using the pool car principle, thus reducing further transportation cost. To avoid possible misunderstanding, it may be explained that the term pool car is broadly intended to cover any combination of shipments that, of themselves, would be assessed on less than carload basis, if turned over to the railroads for transportation, and that are consolidated for the purpose of obtaining a carload rate, which is, generally speaking 80 to 35% of the L.C.L. rates. Such a shipment may be assembled from a number of shippers at point of origin and consigned to a single consignee at destination. Only one bill of lading must be issued and shipment must move between one consignor and consignee, but either or both parties to the transaction may represent a number of persons or firms.

Rate making is generally based on value of service and cost of service.

Cost of Service and Value of Service

Practically all other factors entering into the making of a rate may be roughly classified under the general headings of cost of service and value of service. For example, under the cost of service there are numerous factors such as distance hauled, density of traffic, volume and regularity of movement, type of equipment needed, kind of service required and numerous other conditions, all bearing on the cost of performing the service. The value of the service depends among other things on the value and nature of the article, trade conditions and commercial competition. It will thus be seen that we are dealing with a problem, the very fundamentals of which are incapable of precise classification. Nevertheless, commerce has expanded and the progress of transportation is still forging ahead. A rate should be so constructed that it will enable the commodity to move freely with the least possible burden upon the producer and consumer.

Individual rates based solely on cost of service would be both impracticable and unjust. The actual difference in the cost of moving a carload of silk and a carload of lumber is relatively insignificant, compared with the difference in the value of the two carloads. Under a strict cost basis, the rate on lumber would be prohibitive, whereas the silk would not contribute its fair share to the carrier's revenues.

So much discussed evolution of transportation.

We read and hear a great deal about railroad versus trucking or any other competitive transportation. Most of what is said is opinion only, and everyone has a right to his own.

Developments of the last few years have produced confusion in transportation thought. Business depression, the reduced earnings

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of the railroads, improved highways, changed distribution methods, hand to mouth buying, motor trucks, misleading propaganda, cries of unequal taxation and unfair competition, waterways, financial mismanagement—all have contributed to an unprecedented confusion and uncertainty of the public mind in transportation.

You, gentlemen, all know when a conference breaks down, chaos breaks loose. Although shippers benefit from a condition of anarchy in the sense that they enjoy cut rates, yet they pay heavily for this temporary advantage.

Shipping rates become as much of a gamble as a horse race.

It is not from choice but from necessity that the public is forced to patronize a new transportation service. Business conditions have radically changed in the past few years and some of the old rules are out of date. In this the railroads are no exception. Shippers and receivers of goods will use the methods that seem best to them. Nobody refuses to patronize a bargain sale because he has figured it out that the merchant offering the bargain is hurting himself by offering it, or that the so-called sound economic policy would not permit him to offer it.

Railways and Highways

Co-ordination of railways and highway transportation should be accomplished so as to permit the use of each of these agencies in such a way as to permit the public to get maximum service at minimum cost. By forcing certain restrictions and legislation on a new transportation industry, such as motor transport, it will not cure our present troubles. There must be co-ordination. One must understand that the operations of the motor truck industry are very much different from the operations of the railroads and therefore, we must divorce some of our railroad rules and regulations ideas when we are dealing with this new transportation agency, which is so much more flexible in its service than any other transportation agency.

My views are that co-ordination between highways and railways offers a field of transportation expansion which should not only meet modern business needs by lowering distribution costs, but should be reflected in more stable and satisfactory returns on capital invested in all forms of transportation.

There is no longer any question in the minds of economists that the motor truck performs a service to society wholly and entirely beyond the resources of all railways and upon this fact, the motor truck must and will be accepted as a most important feeder and distributing agency for rail and water transportation.

The railroads must get into the motor transport business themselves. They have the organization, the knowledge, all the machinery—there is no one more than themselves to blame if they allow this business that is going to the trucks and buses to get away from them. It is not too late to remedy this mistake if they will correct the causes which led to it. If the rail carriers wish to stay in the railroad business, they must get into the general transportation business. All they need is courage, vision and freedom of action. With these, there need be no fear of a breakdown of railroad and transportation service, nor a collapse of earning power.

The coming ten years will develop a revolution in practices almost beyond our present conception.

Air Service

It is almost impossible to cover the entire subject in such a short period. I will not venture to speak to you about the modern airports

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or air service. All you know that not very long ago the usual airport consisted of a sheet-iron or wooden barn-like structure located on the edge of a recent acquired hay field or pasture and was reached over an unimproved, dusty or muddy road.

Today the prospective passenger approaches the airport over the finest of improved highways, and from the time of his arrival, the journey by air takes on the aspects of modern travel in the highest degree.

In the last three years, the period when all industry has been adversely affected by economic conditions, air transportation has shown a remarkable progress. As a matter of fact, this progress seems to be one of the outstanding accomplishments of commerce and industry during the period.

I could, if time permitted, give you some very glaring facts about the development of air service and general transportation conditions in Great Britain and on the continent.

Proud as we are of our accomplishments in transportation and aviation, the art is still in its infancy, when one considers the many activities and new methods of transportation throughout the world. If one were to venture upon predictions covering the future, he would first have to remove all brakes from his imagination and then possibly take something to stimulate it beyond its normal functioning.

It would be foolish to-day to predict what type of transportation will be in use a century from now.

Gentlemen, I have not burdened you with many statistics or tables of rates, because even if you were to remember such figures, they change from time to time, and I have, therefore, endeavoured to the best of my ability to present to you a rough picture of my subject.

ONTARIO CHARTERED ACCOUNTANTS' INSTITUTE CELEBRATES 50th YEAR

THE Institute of Chartered Accountants of Ontario celebrated the 50th year of its incorporation at a dinner and reception held in the banquet hall of the Royal York Hotel, Toronto, on February 10th. Over 400 members, students and guests were present. H. A. Shiach, F.C.A., president of the Institute, occupied the chair, and during the evening the origin and growth of the Institute were reviewed by several speakers, including Geo. Edwards, F.C.A., LL.D., W. D. Kernahan, F.C.A., Harvey E. Guilfoyle, F.C.A., and Frank M. Harvey, C.A. Premier G. S. Henry of Ontario spoke briefly on "Public Financing". The Canadian Society of Cost Accountants and Industrial Engineers was represented at the meeting by W. M. Lane, chairman of Toronto Chapter, and W. A. McKague, general secretary.

Woman (entering a circus and seeing a skull): "Whose skull is that?"

Mr. Barnum: "That is Cromwell's skull."

Woman: "That cannot be; I saw Cromwell's skull in England, and it was much larger than that."

Mr. Barnum: "Well, this is Cromwell's skull when he was a boy."

The Use of Charts in Business

By W. A. McKAGUE, M.A.

General Secretary, The Canadian Society of Cost Accountants & Industrial Engineers

(Before Hamilton Chapter, December 7, 1932)

ONE who proposes to use charts in business today may be regarded as a theorist, in spite of the fact that some of his arguments are sound, and some of his work can be made of practical value. He will be wise, therefore, to step cautiously, and endeavour to gradually develop a demand for his pictures rather than attempt to force them upon a dubious executive of the practical business man type.

Of all men in the business, the accountant is the one most concerned with figures. The data from which he works, reaches him in the form of figures. The final result of his work, viz., a balance sheet and profit and loss statement, or a set of costs, is in figures. It is the most natural thing for the accountant to conduct the intermediary work in all its stages by the use of figures, and to convey his information to the executive, as required from time to time, in figures. It is this habit which makes the accountant himself, as well as others in the business, doubtful of other forms of analysis and presentation.

Figures vs. Pictures

And these figures with which we work are really amazing things. There are only ten digits, and yet by sorting and arranging them we in ways understood by all, we can express any idea of number from nothing to infinity. We can make comparisons and establish relations. In short there is no other device known to man, of such capacity for exact expression. But in their actual use and application in business there are one or two weaknesses. The adoption of calculating and accounting machines does not show defects in figures themselves, but in our mental capacity for handling them in this day of mass production and mass calculation. One weakness liable to arise, where figures alone are used for recording and analyzing a business, is that by becoming lost in the detail, we may lose the larger perspective. Obviously this danger may be overcome by the right kind of summarizing and comparison. But a second weakness, arising when we study the results, is that the number of figures which we can carry in our head for purpose of comparing them with another set of figures, is very limited. When we try to compare two sets of figures, say, for instance, inventory with output, or credits with collections, do we not unconsciously try to generalize these figures into increases and decreases, ups or downs, and in so doing we are actually translating figures into some kind of geometric form, in the hope of more readily arriving at a conclusion.

I may bear this out through a commonplace illustration. When your are driving to a railway crossing, and see a train approaching, do you estimate the distances of the train and of your car from the intersection, then estimate the respective speeds, and work out the result by mental arithmetic? Certainly not. You reach a conclusion almost instantly, but not a single figure has entered your head. We may even go so far as to call this a geometric conclusion, since your thoughts have been directly in terms of distance and speed.

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When we pause to think how the older established professions of architecture and engineering have adopted designs in their every day work, and evidently have found distances and angles to be practical short-cuts in reasoning, we as accountants should feel justified in investigating the possibilities for accounting and business administration. The architect could undoubtedly express every detail of his plan through figures and word descriptions, but invariably he accompanies his specifications by one or more sketches intended to convey to the owner and to the builder more quickly and in due perspective, an idea of the structure designed. And while the figures of or relating to a business may, through sufficient analysis, point to every possible conclusion, we may find short cuts through converting them into pictures. Let me, for instance, mention a few figures—4, 7, 11, 16, 22, 29, 37. If you have been very alert, you may have noted that the quantity increase from figure to figure becomes greater throughout this series. You probably cannot say off-hand whether the percentage increase is growing or diminishing. But if this set of figures had been presented to you in chart form, on either the absolute or the percentage basis, the trend would have been instantly apparent to you. Realizing this, we are justified in approaching our subject with an open mind.

Statistical Facts of Business

Of all the facts and figures, personalities and views, which enter into a business, the only ones capable of graphical use are what we may term the "statistical" facts. You may know the maximum capacity of your steam boiler, but unless this figure is related in some way to one or more other figures it is hardly a statistical fact. In business as in the economic world as a whole, statistical facts are those which are not merely figures, but which range themselves into some kind of logical groups. In other words, they must make sense. For instance, the monthly output of a department for a number of months, constitutes a set of figures, or a statistical series, which may be studied of themselves or in relation to other another set of figures. In this instance, we have time as a variable. The amount of overhead to be absorbed at different rates of operation is another series, in which case volume is the variable. Any set of figures can be converted into some graphic form. With a little planning, we can find a sheet of paper and a scale which will accommodate two or several series of figures, and when the job is completed we have them all reduced to common terms of distance and direction, for purposes of easy comparison. It is hardly necessary for me to point out at this stage, that the chart, or the conclusion to which it leads, cannot be any more accurate than the figures of which it is composed.

Selection of Statistics for Charting

Having got over these preliminaries, and assuming that we have before us a great mass of statistical information which we want to summarize and analyze, the next question is, where shall we begin, and, what is equally important, where shall we leave off? I think I am safe in urging that any attempt to translate all the statistical facts into pictures will only lead to a great waste of work. We should rather proceed to study the information by its main groups, bearing in mind all the time the needs and the wishes of the heads of the business and of the various departments.

Two great dangers which the beginner may avoid from the start are as follows: The first is that of charting a set of figures which

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are themselves so simple that all that is needed from them can be learned by a few moments observation. And the second, going to the other extreme, is attempting to assemble on one sheet too much information, so that the person using it is confused by the detail, and the objects of the chart are therefore negated.

Charts conveying very simple information have this use, however,—they may serve to emphasize certain vital points which are not fully realized. Each one of you has no doubt seen, at some time, a drawing indicating "How the tax-payers' dollar goes" consisting of a circle divided into sections, so much for interest, so much for education, so much for general administration, etc. This merely gives you in a different form, what you can learn readily enough by reading the percentages themselves. In a similar way, the relative importance of different products of a concern, the analysis of sales by territories, or the analysis of cost of a product, might be set forth. Under certain circumstances, such charts may be useful for executives or for sales conferences, but there are few cases where the extra work of converting such simple information into graphic form is really justified, and I am passing this type by excepting for one or two references to be made later.

The type of chart which can be of real use in a business, is that presenting information which is vital in the control of the business, in such a way that its trend or significance can be grasped more readily from the picture than from the figures. In every well managed business there are objectives, standards and danger signals which, though they may be changed from time to time are, at a given time, recognized as of great importance, and constantly used in control of the business. If you can select these, and compare in suitable chart form the actual results being obtained, you may perform a service in the business. In such cases the ground-work, that is the planning and preparation of the chart, has to be done only once. Bringing it up to date at the end of each period is a very simple matter. And if kept in constant use, the executive soon becomes quite familiar with the form and content of the chart. He can detect at once what is above or below the desired level, or the level of a year ago. He can recall at a glance the high spots and the low spots and when they occurred. If he has confidence in his accountants and their work is accurate, he may come to depend on reading the charts rather than the figures, at a saving of time and money.

External Statistics

The statistics affecting a business, and which we wish to examine from the viewpoint of charting possibilities, fall into two main divisions. First there are what may be called "external" statistics—those from outside the business but affecting it more or less directly. We now realize, more than ever before, that every line of business is affected by prosperity and depression. Results of a business for the period just ended have to be judged in the light of the general business conditions which have prevailed, and looking to the future, we cannot set up budgets, quotas or estimates, or revise our standards, purchasing and sales policy, without first adopting some view as to general conditions likely to prevail in the period ahead.

So much attention is now given to the state of general business, and so much literature is issued on it, in the daily press, in the financial papers, in bank letters, economic services and various other special forms, that there is no difficulty in getting outside opinions, though there may be difficulty in selecting from them. In certain

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lines of business, say a chain store or other merchandising concern, or a clothing manufacturer, volume of business is bound to depend directly on the purchasing power of the public as a whole, while in a very basic industry like iron and steel, the interests served are so varied that the industry depends upon the same general conditions. For such industries, a general index no doubt is the only one applicable in determining its policy. Such general indexes are made up of commodity prices, industrial production, crop yields and various other items, and the indexes vary only according to the weight or importance attached to each. There are so many varieties to be obtained that I think it is better for me to proceed immediately to discuss records which are of immediate concern to the greater number of industries which depend more or less directly upon some particular trend, and the future of which can be more closely estimated.

Among these records of direct significance, probably the first which should be mentioned, is the total volume of business in an industry. In some industries such figures are available only annually, and usually by the time they come out, the next year is well advanced, so that they merely serve the purpose of a historical check. Even this checking is desirable, however, since it enables the individual concern in that line of business, to compare its growth or decline with that of the industry as a whole. The head of a business certainly should find out, if he does not know already, whether his proportion of the total business has decreased or increased. There are a considerable number of industries for which total figures are available by quarters, months or weeks, and since these usually appear more promptly, they afford an excellent chance for checking up continuously on the position of an individual concern in its field. Among the important lines for which such figures are available in Canada are: Sugar refining, iron and steel production, flour milling, electric power distribution, boot and shoe manufacturing, and radio production.

A comparison of this kind involves studying volume in one concern against the total volume in the industry, which may be done by using the figures themselves, or by percentages. In either case charting is especially suitable for comparisons of this kind. The first specimen chart herewith illustrates the total output of wheat flour in Canadian mills, by months over the past thirteen years. If a suitable scale is adopted to include a line for the individual firm, a direct comparison of real value is obtained. Such a chart can be designed so as to serve for many years.

This information is mainly history, however. The business is even more vitally concerned with those things which govern it. Many of our industries are directly dependent on another line, the sales of the one depend upon the activity of the other. For instance, the wool grower sells to the spinner, the spinner to the weaver, the weaver sells to the clothing manufacturers, and the latter in turn sells to the distributor. If sales of the latter change, it is bound to affect activity and perhaps prices as well, all along the line back to the primary producer. That is why, in your attention to the external statistics, you want to look especially for those which may more or less accurately forecast the amount of business to be available in your line. I feel certain that if information of this kind had been more closely studied in the past, we would have had fewer cases of plant and inventory extensions at the wrong time.

Let us take the railway equipment industry, for example. The second chart covers some statistics on this field. The annual pro-

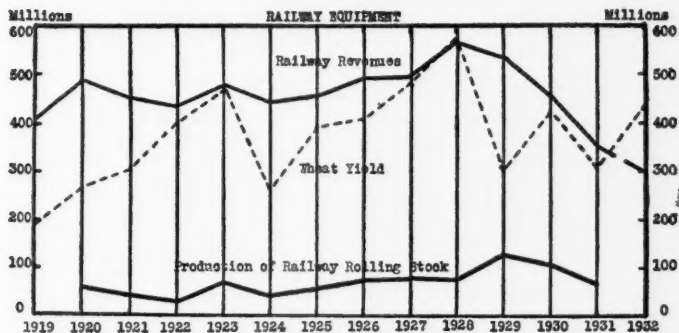
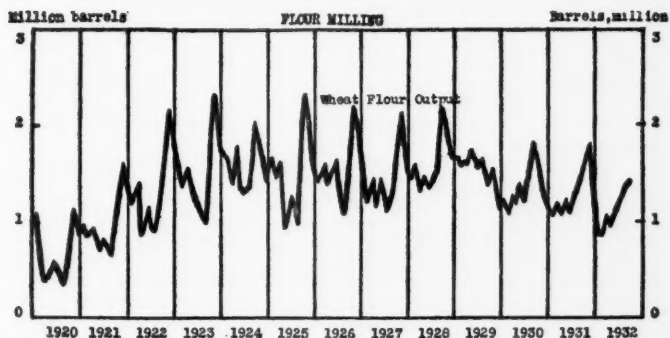
COST AND MANAGEMENT

duction of railway rolling stock is illustrated by the line at the bottom, these figures being available only by years. It is well known that railways' orders for rolling stock are governed in the main by their finances. They buy when they have money, and, broadly speaking, their funds accumulate as earnings rise. A definite increase in earnings, after a period of a few months or perhaps a year, is almost certain to mean some business in equipment. Therefore any concern making railway equipment of any kind should follow with the closest attention the trend of railway earnings. The top line in the chart shows the gross annual operating revenues of the Canadian roads. If you will compare this line with the bottom line, you will see that each important change in railway revenues has been accompanied or quickly followed by a change in the same direction in the amount of equipment orders. As revenues declined in 1921 and 1922, so did equipment business. In 1923 and 1924 the lines are nearly parallel. 1925 to 1928 was a period of expansion in railway earnings, and also in the equipment industry, the latter continuing into 1929, which was its record year for this period. In the past four years railway earnings have been greatly cut, the present indications being about \$300,000,000 for 1932, or the lowest in a long time. Equipment business has also come down severely, 1932 being already known to be a poor year, and the earnings trend thus far is not encouraging for the immediate future.

Let us carry the analysis one further stage, however. What governs railway earning? They are, of course, made up from a great many types of freight and passenger traffic. But in Canada we have one freight commodity of such importance that we may look at it particularly. This commodity of course is wheat, which is our most important grain and also much the most important in railway traffic, since most of it is exported, while the bulk of oats, barley and other grains remain in the country for feed. The annual yield of wheat, in millions of bushels, is included in the chart. Even though wheat is only one of our products, and though prosperity depends upon price as well as upon yield, there seems to be a direct connection which is worth noting, between the wheat yield and the railway revenues. Bear in mind that the crop is available only in the late months of the year, and is inclined to affect the railway earnings of the ensuing rather than of the current year. Wheat yields increased from 1920-23, and in the 1925-28 period, and so did railway earnings in each case. The past four years have been relatively low, but the 1932 yield of about 430,000,000 bushels was the best since 1928. In recent years much wheat has been held back on account of falling and low prices, which policy obviously cut down railway earnings below what they would have been if wheat had moved as usual. This accumulation, coupled with the fair 1932 yield, makes the stock of wheat on this date the largest in our history. This wheat is going to move out at some time. In other words, the potential wheat traffic for our transport systems is the biggest ever known. Low prices may mean depression and slackness in other traffic, but the wheat traffic, which as already mentioned is the item of greatest importance, is at least assured. Thus by looking beyond the present railway earnings, we find a factor of some encouragement to the equipment industry.

I think you will agree that where, as in this instance, we have three sets of figures to compare and relate, the chart is easily the most convenient device for doing so, and any one securing important business from the railways, whether in rolling stock or other form,

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is fully justified in having a chart of this type constantly at hand. In fact it might very well be extended to show the net as well as the gross earnings of the roads, since it is the net which creates the surplus funds available for new equipment. The railway earnings are available from month to month, and may be charted monthly, or else an estimate for the current year may be made on the basis of the monthly figures thus far available, as has been done in the chart illustrated.

A business concern is interested in prices just as much as in volume, and price relations can equally well be established and examined by charting. We are all well aware that the price of a product depends in part on what you can get for it, and also to some extent on the costs which enter into it. A change in the price of a raw material is nearly always followed quickly by a change in the same direction, in the price of the finished product. In a product assembled from many parts, such as an automobile, a radio, or an expensive piece of furniture, the cost of any one material may be small as against the total of labor and overhead entering in at all stages. But in many products, such as bread, flour, refined sugar, and textiles, there is one material of dominating importance, an important change in which is bound to affect the price level of the product.

The executive and the purchasing department of a concern is of course quite familiar with the price trend of the important materials used in that concern. The accumulation of these price statistics over a long period, and their illustration by a chart, constitutes interesting history from which it is possible that conclusions for buying policy may be conveniently reached. But my suggestion rather is that the study be carried, if possible, at least one stage farther back, to the material entering into that article which you buy. I have met instances where the executive or the purchasing department was perfectly well posted in the price trend of what was being bought, but only vaguely familiar with the factors controlling that price trend, though, all the time, a little extra trouble would have brought these definitely into the light. As an illustration I have shown, in the third chart, the price of sole leather, which of course is very important in the manufacture of boots and shoes, and also the price of hides from which sole leather is obtained as one of the principal products. It is possible that when tanners have to pay more for hides, they may recoup themselves out of the price for uppers or other grades, and leave the price of sole leather as it is. But the relations in the case of such a well established industry are generally stable, that is, it is pretty well established how much of the cost must be met out of cuts for sole leather, and how much out of cuts for other grades. This is born out by a study of the two lines on the chart. If you follow them closely, you will see that each important change in the price of hides has been accompanied or followed within a few months by a change in the same direction in the price of sole leather. I need not point out to you the importance of such an index to the buyer of sole leather, or any other important grade of leather. You will note that hides, in the post war price-slump, hit a low point in the summer of 1921. Leather kept going down for another year. But the stiffening in hides in the meantime, coupled with the slackening in the decline in leather itself, should have indicated very well, to the buyer of leather, that advance commitments could be made with the chances in favor of the buyer. Again, in 1928 and the beginning of 1929,

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sole leather was stable at about 49 cents, while hides were showing signs of weakness. This was a warning against commitments at the relatively high level then existing. As in most other commodities, hides and leather have declined severely since 1928, the raw material showing the most fluctuations, which is also in accord with other experience. The chart demonstrates, as a matter of history, the very low level reached by each during the past summer. Two previous recoveries in hides, in 1929 and 1931, were just as great as the one which took place since June, 1932, but they proved to be only temporary breaks, the main downward trend being subsequently resumed. This illustrates the difficulties of foresight, as compared with hindsight. But it is evident that with the level of hides down so near to nothing, that purchases now cannot be badly wrong. Leather might go still lower, by another drop in hides or by a reduction in the tanner's margin, but the movements in hides are at least a warning to users of leather, not to be caught on the short side. I would suggest, to any who are very much concerned with leather, that further light on the question might be obtained through statistics of animal marketings, which of course carry the inquiry back a further stage, to the source of supply for the tanners themselves. The possibilities on the demand side, i.e., by other users of leather, may also be estimated.

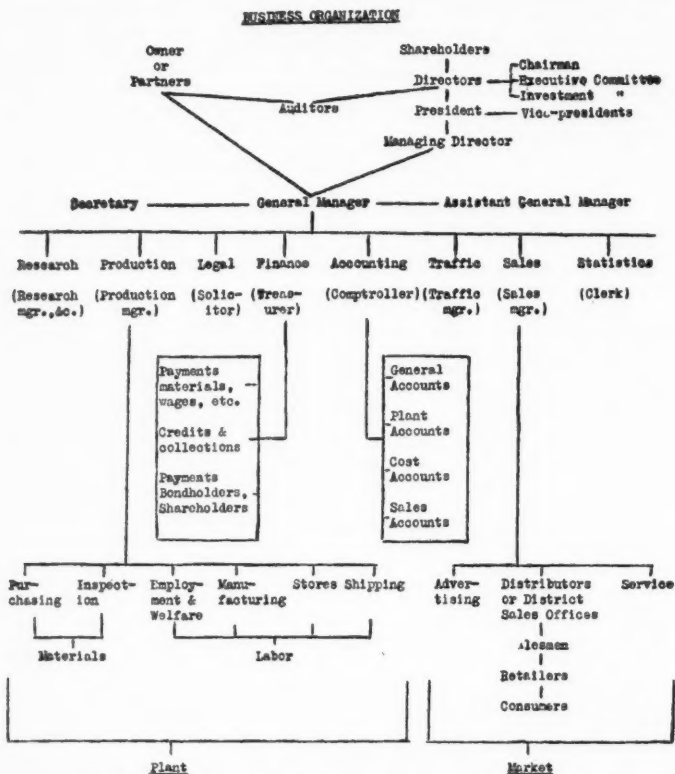
Statistical work in the general economic field, or "forecasting" as it is sometimes called with a touch of humor, has come into disfavor because so much of it has been prostituted to the support of a bull stock market, and because in so many instances attempts have been made to reach a geometric conclusion by purely mechanical treatment of figures. I am not attempting to discuss these points, but I would remind you that a new science can not get on the right track at once. Think of how many people were systematically bled before the medical men discovered that it was an infusion of the right kind of blood, rather than a letting out of the wrong kind of blood, that was the proper cure. Think of how many gross errors were committed in the name of cost accounting, before this occupation gained the foothold it has now obtained. And, bearing these in mind, give the statisticians a reasonable chance to find the right way of forecasting business, even though in the meanwhile every business goes bankrupt and every investor is ruined. I have purposely made my illustrations of cases where there is a more or less direct relation between one business and another, or between one price and another. The facts that I have mentioned are well known to everyone in the business concerned. The statistics and the charts merely indicate ways in which the knowledge can be put into definite and convenient form for practical use in the business.

Internal Statistics

Let us now look at the "internal" statistics of the business. First of all I may refer briefly to a point which does not exactly come under the head of statistics, but which is very commonly expressed in graphic form. I refer to an "organization" chart—there may be one or several of these. I think we will all agree that while there may be too much system, more cases are found where there is too little. A business, or any other organization, will not run efficiently unless there is some definition of duties and responsibilities. Our question merely is, can these points be clarified, and expressed best by description or by chart? Personally I feel that an organization chart is the most concise way of defining these

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duties and responsibilities, and it should be the basis or skeleton for any supplementary definition. If an organization appears to be functioning well, the preparation of such a chart at least serves the purpose of perpetuating, subject of course to changes in conditions or size, the organization which has been found most satisfactory and making it clear to newcomers. But in practically every



case, the preparation of such a chart brings to light one or more inefficiencies and grievances, and if in so doing these can be overcome, the work of charting is of that much more value.

The one herewith does not describe any particular concern, but is rather a skeleton or omnibus chart giving a typical set-up. If any of you contemplate doing a job of this kind for your firm, the illustration may be helpful both as to lay-out and as to content. This particular illustration includes practically everything to be found at the head of the organization, i.e., we have certainly provided for the owners and the directors, and jobs for the auditors as well. But

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there are a great many more subdivisions, which can be found under the production department of a large concern, as, for instance, the planning clerks, the industrial engineer (if any) and the engineering or design department. Some organization charts attempt to segregate every activity under one of the three recognized main divisions, viz., sales, production and accounting and finance. I am rather of the opinion that some of these small departments often have an independent status. That is, a traffic manager usually deals with handling of both purchases and sales, and though his contact may be with one more than with the other, you will probably find him responsible, finally, to the general manager of the business. However, my subject is not organization, and I will not pursue this further. I have merely given an illustration of an organization chart.

Where the size or nature of the concern warrants it, this main chart may be supplemented by departmental charts, or by charts to indicate routing of materials through the plant, or flow of work through the office. The one entitled "Route of an Order" is a specimen of the latter. This is of course an office chart, and must be distinguished from one which attempts to show the routing of goods in the plant. One or more charts may have a useful place in the office instruction manual. Needless to say, they have to be changed from time to time.

You will recall that earlier in my talk I mentioned charts not of the type for continuous use, but intended to merely emphasize points which could be ascertained readily enough from simple figures. And I suggested then that if the figures were important enough there might be justification in translating them into charts for the study of the executive, or directors, or for staff or sales conferences. Suppose, for instance, a new product, or a new department is contemplated. Such a move requires the utmost consideration, the collection of many statistics and the preparation of many estimates. It is essential

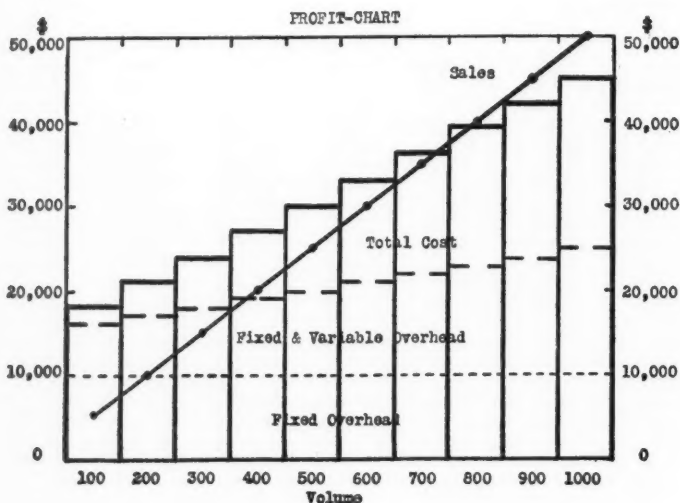
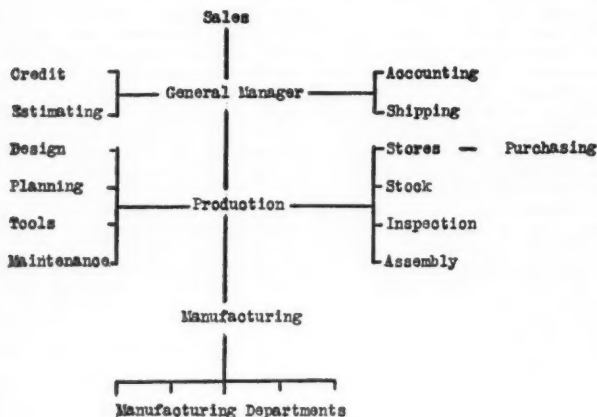
PROFIT CHART

Volume	Fixed Overhead	Variable Overhead	Direct Cost @ 20	Total Cost	Sales @ 50	Unit Cost
100	10,000	6,000	2,000	18,000	5,000	180.00
200	10,000	7,000	4,000	21,000	10,000	105.00
300	10,000	8,000	6,000	24,000	15,000	80.00
400	10,000	9,000	8,000	27,000	20,000	67.50
500	10,000	10,000	10,000	30,000	25,000	60.00
600	10,000	11,000	12,000	33,000	30,000	55.00
700	10,000	12,000	14,000	36,000	35,000	51.40
800	10,000	13,000	16,000	39,000	40,000	48.80
900	10,000	14,000	18,000	42,000	45,000	46.70
1,000	10,000	15,000	20,000	45,000	50,000	45.00

that a right perspective be maintained throughout the study, and may need to be emphasized in every possible way. Assuming that capital and plant are available or can be provided and that an approximate price is fixed, the main questions no doubt will be, what are the sales possibilities, what are the costs, and what will be our results if sales fall short or exceed the necessary volume. It is possible to set forth such estimates in graphic form, and various types of "profit-chart" have been developed. I have one specimen herewith. We are not dealing with a time element or variable, as in the previous specimens which gave a history and a possible basis for fore-

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ROUTE OF AN ORDER



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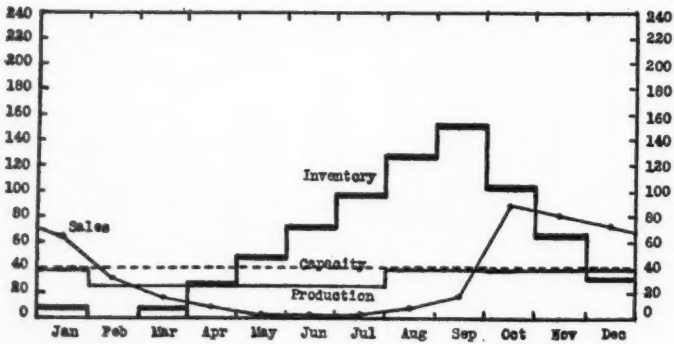
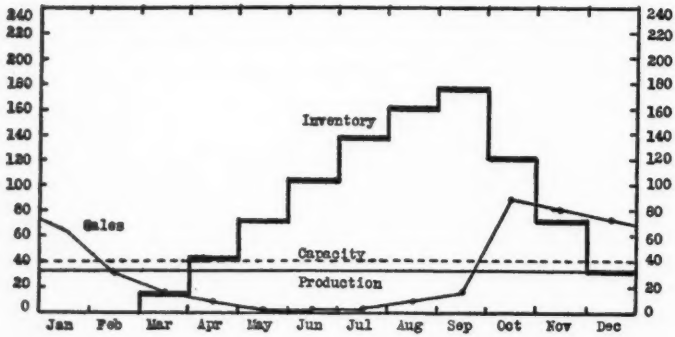
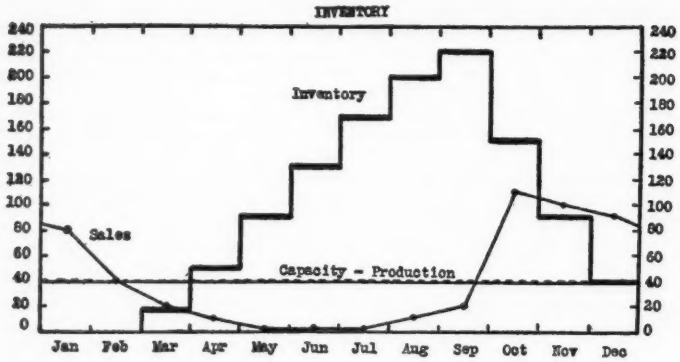
casting the future. Now we want to show results under a variety of conditions, viz., a variety of sales or production volume, so the horizontal spaces on the chart indicate varying volume, in units. Suppose the sale price is to be \$50, then the slanting line indicates the amount realized from sales at each volume. Let us suppose there is a fixed overhead of \$10,000, and a further overhead which varies with volume but not in proportion to it, then a direct cost of say \$20 per unit.

You can study the figures or study the chart, as you please. Either shows readily enough that you need a volume of approximately 400 to cover the overhead, and 800 to cover the total cost.

Let us now study another problem which arises when a new department or product is contemplated, say a product subject to pronounced seasonal conditions. This raises the whole question of plant capacity, storage capacity, capital investment, and risk of deterioration or obsolescence. You cannot try to tell the whole story, to measure every factor, in graphic form, and probably would be no further ahead if you did so. You may, if you like, express some of the definite estimates in this way. I have taken an example in a product which retails only in the cold weather. In this instance sales of 480,000 units were regarded as the maximum possibility, and it was desired to be prepared to handle up to that much business. The trend of deliveries was estimated to vary from none in the summer months to a possible peak of 110,000 units in October. The next question was that of plant capacity versus storage capacity; the factor of interest of course enters in in either case, whether on the investment in manufacturing or storage capacity. This product not being subject to physical deterioration and with a remote chance of obsolescence within one year, and storage being much cheaper than plant, it was decided to equip only for the maximum output of 480,000 units a year, at capacity production continuously throughout the year. That is, if 480,000 units were sold, the plant would have to work at capacity throughout the year, and accumulate a large inventory. Actually, 384,000 was accepted as a fair estimate of business to be secured in the early years at least, and plans were made on this basis. Then the question was whether to work at capacity in the season of deliveries or to set an even production schedule through the year. Here are the figures used as estimates.

	Prod. at Capacity			Prod. under Capacity					
	Sales	Produc- tion	Inven- tory	Sales	Produc- tion	Inven- tory	Plan 1 Produc- tion	Plan 2 Inven- tory	
Jan.	80,000	40,000	—	64,000	32,000	—	40,000	8,000	
Feb.	40,000	40,000	—	32,000	32,000	—	24,000	—	
Mar.	20,000	40,000	20,000	16,000	32,000	16,000	24,000	8,000	
Apr.	10,000	40,000	50,000	8,000	32,000	40,000	24,000	24,000	
May	—	40,000	90,000	—	32,000	72,000	24,000	48,000	
June	—	40,000	130,000	—	32,000	104,000	24,000	72,000	
July	—	40,000	170,000	—	32,000	136,000	24,000	96,000	
Aug.	10,000	40,000	200,000	8,000	32,000	160,000	40,000	128,000	
Sep.	20,000	40,000	220,000	16,000	32,000	176,000	40,000	152,000	
Oct.	110,000	40,000	150,000	88,000	32,000	120,000	40,000	104,000	
Nov.	100,000	40,000	90,000	80,000	32,000	72,000	40,000	64,000	
Dec.	90,000	40,000	40,000	72,000	32,000	32,000	40,000	32,000	
Total	480,000	480,000	—	384,000	384,000	—	384,000	—	

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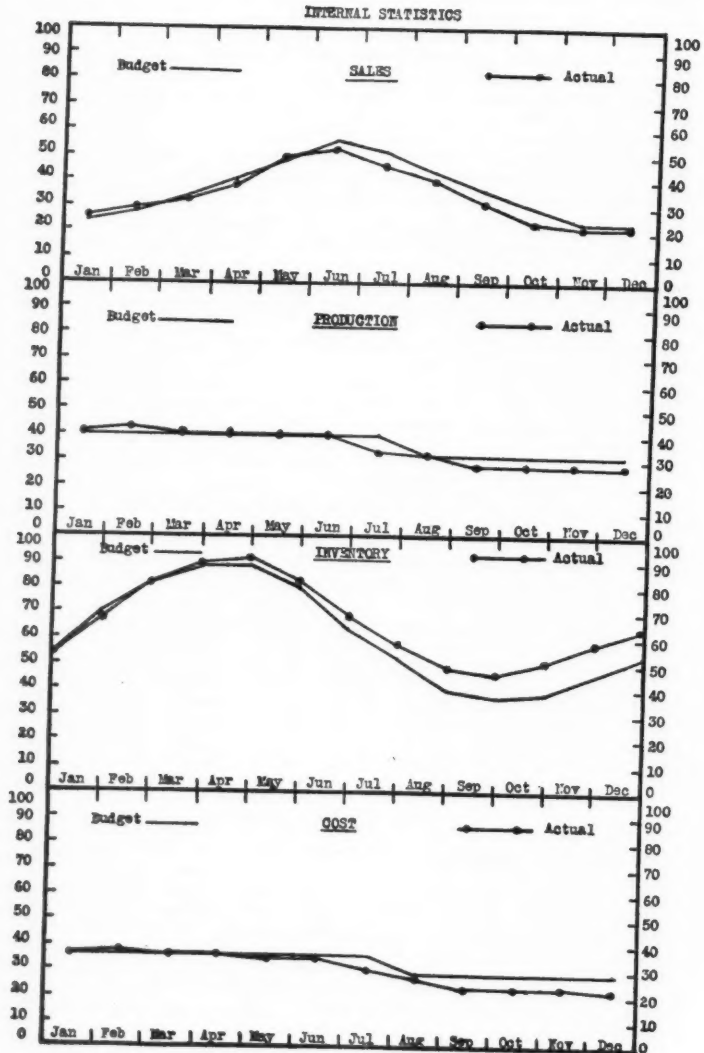
The chart puts these alternatives in graphic form. If sales reach 480,000 a year, production will have to be at capacity throughout the year, and inventory mount to 220,000 units by the end of September. With a sales volume of 384,000 a year, you have a choice between a constant production schedule of 32,000 units per month and a maximum inventory of 176,000 units, or a production at 40,000 units in the busy season and 24,000 units per month in the off season, which will involve a maximum inventory of only 152,000 units. In choosing between these latter two, you will have to examine your storage costs and your production costs at varying rates of output. You can work and explain from figures or from charts as you prefer. I am merely placing before you a specimen of such data in chart form.

We turn now from these charts for demonstration purposes, to those for constant use in internal control. These will give a history of the past and a possible basis for estimating the future. As to what you may best chart in your particular business, that will depend upon what is most vital in the control of your business. Even if you have no estimates, or budgets or standards, you can at least follow the trend of the business from period to period. I have illustrated the principal figures in a case where a budget is used. These particular figures are adapted from the records of a concern which uses a budget. Every business of any size and efficiency knows its sales, its output, its inventory and its costs, so I have used these main figures. They are as follows:

	Sales		Production		Inventory		Cost	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Dec.					54,000	54,000		
Jan.	24,000	25,000	40,000	40,000	70,000	69,000	36,000	36,000
Feb.	28,000	29,000	40,000	42,000	82,000	82,000	36,000	37,000
Mar.	34,000	33,000	40,000	40,000	88,000	89,000	36,000	36,000
Apr.	40,000	38,000	40,000	40,000	88,000	91,000	36,000	36,000
May	48,000	49,000	40,000	40,000	80,000	82,000	36,000	35,000
June	56,000	53,000	40,000	40,000	64,000	69,000	36,000	35,000
July	52,000	46,000	40,000	34,000	52,000	57,000	36,000	30,000
Aug.	44,000	40,000	32,000	32,000	40,000	49,000	29,000	28,000
Sep.	36,000	31,000	32,000	28,000	36,000	46,000	29,000	24,000
Oct.	30,000	23,000	32,000	28,000	38,000	51,000	29,000	24,000
Nov.	24,000	21,000	32,000	28,000	46,000	58,000	29,000	24,000
Dec.	24,000	22,000	32,000	28,000	54,000	64,000	29,000	23,000
	440,000	410,000	440,000	420,000	420,000		400,000	390,000

The figures are charted herewith, and no explanation is really necessary. You can study either the figures or the charts, but I am sure that you will follow the charts much more readily, and if the story were extended over several years rather than one, the advantage of the charts would be very much greater. You will see that the actual sales started off well enough, but ran behind the budget later in the year. Production was allowed to run along a little further, but was finally dropped to a much lower rate than had been planned. Inventory had meanwhile accumulated, and remained higher than had been planned. In this particular case, savings in cost which had not been anticipated, were realized, even at the lower rate of output. Beyond these main headings it is rather difficult to find any common ground as to what is most important in different concerns, and each one really has to make its own choice, and then

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CHAPTER NOTES

decide as to whether charts are worth while. I know of one place where sales are charted by branches or dealers, and by products, and of another where collections and accounts receivable are kept under close observation in this way. I should think there would be a good use for charts in concerns which use standard costs, and which maintain a periodical comparison of actual with standard.

In closing, I will again emphasize that while the whole field of statistics and charting of statistics, is still very dangerous ground to tread upon, it is a field which is drawing nearer and nearer to the actual administration of business. The statistical information being accumulated both without and within your business, is going to be used in your business sooner or later, whether in wisdom or in error. You will make no mistake in seeking for ways of summarizing and presenting this information, in order to obtain most quickly and accurately, the conclusions to which the information points. Charts or diagrams cannot solve your business problems any more than will your accounting machines or your cost records, but if soundly devised and executed, they can become one of the effective tools of the business.

CHAPTER NOTES

MONTREAL

Reported by R. Schurman, C.A., secretary
February 10th, 1933

There was a goodly attendance of members of the Montreal Chapter and their friends, to hear Messrs. Farquharson, Dufresne and Gratton give an address on "Some Industrial Problems."

Stanley Farquharson, A.M.E.I.C., of Farquharson, Goforth & Company, was the first speaker. Mr. Farquharson, with very considerable care, led in a discussion intended to outline a set-up for the establishment of an industry, and the effect of such industry on a community in which it might be located. He stressed the requirements of finding overseas, as well as domestic markets, for partly manufactured and raw products, while still assisting in the industrial expansion of the country. He illustrated that such industrial expansion was in part due to the aggressiveness of industrial commissions and to the commercial intelligence service overseas which aided the manufacturers.

Civic industry in a community aided considerably in the growth of industries; and coupled with this there were the additional factors of railroad and banking interests in such products. In order that the products manufactured could be sold with certainty it was necessary that a careful study be made of both the market viewpoint and the investment viewpoint, leading to the size of the project. This portion of the address was treated on broad general grounds, and Mr. Farquharson showed how very necessary it is that all the basic factors be thoroughly considered in their relation to the community in which the industry may be situated, in order that it might be of lasting value.

Mr. P. E. Dufresne, industrial engineer, in following Mr. Farquharson, read a very carefully prepared address, outlining the important factors entering into the cost of product, machinery installation, labour requirements and material used. Mr. Dufresne quoted ex-

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amples of certain types of industries which had been started, with little or no capital, stating that the turnover had been so rapid that the returns from the sales had been received in time to meet the necessary expenses for material and labour. He showed by carefully worked out examples, conditions in the footwear industry, which had resulted in reducing the rate of turnover from fifteen days to one day. He illustrated the establishment of manufacturing costs and the variation of labour efficiency. The address was replete with intimate examples of establishment of costs.

Following Mr. Dufresne's address there was a very free and open discussion carried on by several members, led by Mr. T. I. Smythe.

The meeting was late in starting and President Masterson, due to complaints from some of the members that meetings had not been closing as early as they should, endeavored to sound lights out at 10 o'clock.

For this reason comparatively little time was allotted to the third speaker, Mr. Valmore Gratton. Mr. Gratton had come well prepared with statistical records to illustrate his portion of the discussion on Industrial Problems. Owing to the lateness of the hour he withheld the greater part of the subject matter.

It was essentially a meeting for the engineers. Many of those present were members of sister societies.

Mr. Lorenzo Belanger, C.P.A., very appropriately thanked the speakers for their valuable papers.

The Chapter are exceedingly grateful to McGill University for the use of their very excellent appointments, made available to the members for these meetings.

February 24

When Mr. B. A. Dugal, Superintendent of Insurance and Inspector for Trust Companies for the Province of Quebec, addressed the last meeting of the Montreal Chapter on February 24th. It was necessary to secure the auditorium of the Engineering Building of McGill University, to provide accommodation for the large number of members and their friends who attended the meeting.

It was an enthusiastic audience which greeted the speaker, who was introduced by his friend and confrere, Mr. L. Belanger, C.G.A., C.P.A. Mr. Dugal dealt with his subject under three main headings:- Jurisdiction, Valuation and Cost. He explained that he was one of a group of forty-eight insurance superintendents exercising supervision over some eight hundred insurance and trust companies in North America, which companies transacted business all over the world, and held 50% of the savings of the public on this continent. He emphasized the importance of cost accountants and auditors when making their audit reports, giving a true picture of the financial standing of companies, free of any influence. He stated that there is almost no limit to the field of activity open to cost accountants in the insurance sphere. With an experience of 43 years in various types of accounting work, Mr. Dugal was able to draw from his wide knowledge of accountancy and practical contact in many lines of business.

Mr. Dugal dealt fully with the subject of valuation of securities and outlined a permanent plan for the valuation of securities held as investments in the portfolios of insurance companies. He explained for the purpose of deciding upon a plan for the valuation of securities, one American and one Canadian committee had been formed—the two together making an international committee. The members of the Canadian committee are Mr. Dugal and Mr. Leighton Foster,

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Superintendent of Insurance for the province of Ontario. He made a strong plea for the abandonment of stock market prices as a basis for valuation influenced as they are by "bullish and bearish manipulators." He maintains that the value of a security can only be established by a thorough analysis of the balance sheet of the institution which issued it, taking into consideration also how the investing public welcomes the security on the market. Securities held by insurance companies in North America amount to over twenty billion dollars, or over 40% of the total reserve of gold and silver of the world.

In dealing with the insurance cost, Mr. Dugal reviewed the fields of life, fire and accident. He showed that the agent's commission for writing life insurance, affected the cost of the first year premium, paid from 40% to 85% and for the ensuing five to ten years from 3% to 10% each year. Another very great expense burden on insurance companies is the cost of lapsed policies, requiring in some cases 100% of the first three annual premiums as a reserve to cover cost of acquiring and carrying the risk, before any reasonable profit can be made.

In dealing with fire insurance, he stated that there was not enough fire prevention observed; that a study of statistics of fire losses in Canada shows that more fire fighting apparatus is needed and the public must decrease the enormous waste of national wealth. In Canada in 1931, the ratio of net loss cost to net premiums written, 60.23; and to net premiums earned 57.93. In the last five years Manitoba was lowest, 42.61; Yukon, 96.85; P. E. Island, 79.67; Province of Quebec, 52.50. Mr. Dugal maintained that as premiums are paid in advance and the money invested, earnings on the investments belong to the policyholders and that the yield or a portion at least, should be a factor in lowering the cost of insuring. He invited the members to study this point. He discouraged the system of allowing insurance companies to be the bankers of the policyholders.

Discussing automobile insurance, he stated that net premiums written in 1931 were \$16,825,000, and the losses incurred were \$9,786,000; the ratio of net loss cost to net premiums written being 58.16. The loss cost among the various companies varied from 3.10 to 86, the majority being from 15 to 60.

Mr. Dugal scored careless auto drivers, stating that the casualty list during the last 5 years from this cause exceeded that of the American army during the war.

Delivery of the complete address, requiring almost an hour, held the attention of the members to the close. Past-Chairman Louthood moved a vote of thanks to Mr. Dugal, which was very ably seconded by Professor R. R. Thompson of McGill University.

Following the address, the speaker and directors of the Chapter were entertained by Chairman Masterson and Mr. Belanger.

It has been said that a prophet is not without honour save in his own Country—this can hardly be said of our popular Chairman of the Montreal Chapter, Mr. J. P. Masterson, C.G.A., who has recently been appointed director of Canadian Industrial Alcohol Co., Ltd., and its several subsidiary companies. This is a signal honour to our efficient and aggressive Chairman. The members of the Montreal Chapter and readers of "Cost and Management" extend hearty congratulations.

COST AND MANAGEMENT

TORONTO

Toronto Chapter's meeting of February 20th was addressed by Mr. Charles LaFerle, traffic manager of the Robert Simpson Company, Ltd., on the subject of Traffic and Distribution Costs. Mr. LaFerle gave a comprehensive outline of forms of transportation. He described the functions and organization of a transportation department in an industrial concern, and showed how it could be justified through the savings realized. As his address is available for printing in Cost and Management, further reference to its contents is not necessary here. The speaker was accompanied by Professor W. T. Jackman of the University of Toronto. Several of our members took part in the discussion. The attendance was not as large as we would like to see.

Our next meeting, March 20th, will be devoted to discussion of Sales and Administrative Expenses. It has not yet been decided whether there will be a special speaker, or whether a group of our own members will take the lead, but in any event a thoroughly interesting evening is assured. This will also be the annual meeting of the Chapter.

Plans are also being completed for our Chapter annual dinner, to be held on April 10th, the speaker for which is Mr. R. H. Coats, head of the Dominion Bureau of Statistics, Ottawa.

HAMILTON

Reported by R. Dawson, Secretary-treasurer

The election of officers for the ensuing year resulted in the following being elected: Chairman, H. P. Wright; Vice-Chairman, K. M. Horton; Secretary-Treasurer, R. Dawson. Directors, S. E. Lebrocq, G. E. F. Smith, C.A., A. J. Mouncey, O. H. Menzel, C. W. Berquist and F. Moffat.

Representatives on Dominion Board: A. E. Keen, C.A. and A. J. Ballentyne.

The season so far has been a most successful one, with but two exceptions the attendance at our meetings being large and the various speakers giving us plenty to think about.

On the occasion of our last meeting Mr. A. E. Bliss spoke on the subject "Business Risks and Their Insurance." Mr. Bliss gave a very comprehensive talk which proved very interesting to the members present although we had a rather small attendance.

At our next meeting Mr. E. D. MacPhee of Toronto will address us on "Executive Control in Business."

At our meeting of March 22nd. three of our members Mr. A. Howey, Mr. A. J. Mouncey and R. Dawson will speak on "Uniformities and Variations in Standard Costs." On this occasion Mr. G. E. F. Smith and Mr. M. I. Long, both Chartered Accountants will present a criticism on each of these three papers and as our St. Catharines and Niagara Falls friends are expected to be present we are anticipating a real night.

VANCOUVER

Reported by Maurice Willis, Secretary.

Factory Costing was the subject taken by Mr. J. W. Hall of the Canadian Industries Ltd., New Westminster, when the Chapter

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met at the Associated Dairies Ltd. at 8 o'clock on Tuesday, February, 14th. Mr. Hall in his talk clearly showed how the method of costing such a seasonable commodity as fertilizer had been successfully installed at the New Westminster plant of his firm.

All expenses were as much as possible charged to an item of production. There were no stores kept, and any parts required were chargeable to a specific account.

As some of the products were sold and yet used in the plant in the manufacture of fertilizers, the costs were calculated for each stage, the sale price could then be ascertained and the cost price was chargeable to the production of the next commodity. Overhead being charged on the value for the three stages of manufacture.

Being a very seasonable product, fertilizers were subject to a theoretical cost as well as the actual cost. The latter adjusting itself in the twelve month period, the former for use of the sales department in the pricing of the goods. At the beginning of the year the sales department furnished the costing department with the amount of expected sales for the twelve months period, it was then a simple matter to deduce the amount of overhead chargeable on the theoretical costs of the products. The system had been found to work out well, as after the twelve months period the difference between the theoretical amount of overhead and the actual had never been more than three or four hundred dollars on the total years output.

This brief write up does not cover this subject as Mr. Hall did at the meeting, and so we hope that we will soon have the privilege of seeing his lecture in print in this paper at an early date.

There were about thirty members and friends present and the subject must have been of universal interest as there were lots of questions asked Mr. Hall at the close regarding the theoretical cost and the actual cost on the monthly reports.

Next month's meeting to be held on March 14th will be on Insurance and the speaker to be Mr. Roy Shields of the Bell & Mitchell Insurance Company. As Insurance is a subject of interest to all accountants in every phase of industry, the directors hope to see all the members present.

This meeting is also the final meeting of the season, prior to the annual dinner to be held in April, and nominations for the election of the directors for the 1933-34 season will be taken.

SOCIETY CLOSSES FINANCIAL YEAR IN GOOD POSITION

The Canadian Society of Cost Accountants and Industrial Engineers closed its financial year on February 28th, 1933, in good position in respect to membership and finances. The severe conditions of the year resulted in some loss in membership. Revenue also was lower, but expenses were reduced, and the Society again shows surplus of revenue over expenses.

The annual general meeting of the Society will, it is expected, be held in Montreal on April 21, which is the date of the closing dinner of Montreal Chapter. Further notice will be published in our April issue.

COST AND MANAGEMENT

THE TREND OF PRODUCTION COSTS

Commodity prices, as measured by the Dominion Bureau of Statistics index number which is based on the year 1926, declined from 64.0 in December to 63.9 in January. The following is a comparison by main groups:

	January 1932	December 1932	January 1933
Foods, beverages and tobacco	63.6	59.3	59.5
Other consumers' goods	79.8	78.2	76.7
All consumers' goods	73.3	70.6	69.8
Producers' equipment	91.1	87.7	87.7
Building & construction materials	79.5	76.2	75.8
Manufacturers' materials	60.3	50.8	51.1
All producers' materials	63.8	55.4	55.6
All producers' goods	66.5	58.6	58.8
All commodities	69.4	64.0	63.9

The principal advances in January were in the following: Fresh and dried fruits, hides and skins. The principal declines in January were in the following: raw silk, silk hosiery, furniture, scrap iron, pottery, drugs and pharmaceutical chemicals.

CANADIAN TARIFF BOARD

The functions of the recently appointed Canadian Tariff Board include the study of production costs in Canada. In respect of goods produced or imported into Canada the board shall, at the request of the Minister of Finance, make inquiry as to:

(a) The price and cost of raw materials in Canada and elsewhere, and the cost of transportation thereof from the place of production to the place of use or consumption;

(b) The cost of efficient production in Canada and elsewhere, and what increases or decreases in rates of duty are required to equalize differences in the cost of efficient production;

(c) The cost, efficiency and conditions of labor, including health of employees, in Canada and elsewhere;

(d) The prices received by producers, manufacturers, wholesale dealers, retailers and other distribution in Canada and elsewhere;

(e) All conditions and factors which affect or enter into the cost of production and the price to the consumers in Canada;

(f) Generally, all the conditions affecting production, manufacture, cost and price in Canada as compared with other countries.

Reports on tariff matters under these headings are to be made to the Minister of Finance.

Hearings, public in character, are to be held in Ottawa. Sitzings outside of the Capital also are authorized.

The board is to be a court of record. In addition to carrying on the duties of a Tariff Board, it will exercise certain authority which is now exercised by officers of the Department of National Revenue. Powers of the Combines Act for initial investigations may, if it is thought desirable, be exercised by the board itself.

The body will not make recommendations as a result of its tariff hearings, but shall submit a finding of facts to the Government. Parliament will still continue to exercise its tariff-making powers. Reports of the board will be laid before Parliament.

CANADIAN TARIFF BOARD

DEATH OF JAMES HUTCHISON, C.A.

The accounting profession suffered a severe loss on February 18th, in the death of James Hutchison, Montreal. His life of 60 years was crowded with notable achievements in his profession, and in devoted service to his community, performed with that quiet preciseness which marked his recognized leadership. He was one of the incorporators and charter members of our Canadian Society of Cost Accountants, and as vice-president representing the Province of Quebec, he led in the early organization work and development of our chapter activities. He was a past president of the Society of Chartered Accountants of the Province of Quebec, and member of the Society of Accountants in Edinburgh.

In his professional capacity he was greatly esteemed for his outstanding and unusual ability to translate into terms of future action and performance, the figures indicated in the balance sheets of his clients. Directors of Canada's largest financial, industrial and charitable institutions took counsel from his keen grasp of their administrative affairs.

As a friend his probity, loyalty and abounding geniality made him a constant source of inspiration. He was a power for good amongst us.

NEW MEMBERS

Montreal Chapter

Johnson Ralph G., Burroughs Adding Machine of Canada Ltd., Montreal.

Toronto Chapter

Upper, H. C., Canadian Wineries Ltd., Toronto.

Simpson, J. R., Imperial Oil Ltd., Toronto.

Maloney, E., United Typewriter Co. Ltd., Toronto.

BACK COPIES WANTED

Our supply of the following numbers of Cost and Management is exhausted, and as requests for back copies are frequently received, we will appreciate receiving these copies from members who may not wish to keep them longer:

May, 1928, December, 1929, February, 1931, March, 1931, April, 1931, November, 1931, January, 1932, March, 1932.

Send to the Society's office, 81 Victoria St., Toronto.

PERSONAL ITEMS

Mr. Ludovic J. Grondin, a member of our Society, has been promoted from chief accountant to secretary-treasurer of the city of Verdun, Que.

COST AND MANAGEMENT

REFERENCE LITERATURE

RECEIVED IN FEBRUARY

- Dumping and Costing. The Accountant, Feb. 11.
Management Research, Organizations for Promotion of. Bulletin of International Management Institute, January.
Oil Company, Accounts of an. Journal of Accountancy, February.
Flooring Industry, Accounts of Hardwood. Journal of Accountancy, February.
Depreciation Reconsidered. Accountants' Journal, February.
Instalment Sales Income on Realized Basis. American Accountant, February.
Management, Industrial. Manufacturing and Industrial Engineering February.
Selling by Employees. Metropolitan Life Insurance Co.
Municipal Overheads, Allocation of. The Cost Accountant, January.
Hosiery Mill, Cost Accountant Reduces Cost and Improves Quality in. National Association of Cost Accountants, February 1.
Payroll Budget of National Cash Register Company, Factory. National Association of Cost Accountants, February 1.
Sales Forecasts, How to Determine Costs on Pre-determined. National Association of Cost Accountants, February 15.
Budget, How we run our Business on a. National Association of Cost Accountants, February 15.

NEW BOOKS

Auditing. By R. G. H. Smalls, B. Sc., Published by Commercial Text Book Company, Toronto.

Professor Smalls of Queen's University is well known to accountants throughout Canada, through his previous works—"Accounting Principles and Practice" (Smalls and Walker) and "The Working of a Cost System". In this new volume of 441 pages he deals with accounts and records from the strictly auditing viewpoint, and the volume appears to be very complete and concise for that purpose. The general accountant also has considerable interest in the things the auditor must look for, and in methods of internal auditing to avoid difficulties when the external audit comes around.

The scope of the book is indicated by the following Chapter headings: Auditing and Internal Check as Means of Verifying Accounts; Legal Duties and Professional Responsibilities of the Auditor; The Audit Appointment; Internal Check and Audit Procedure—Purchases and Expenses, Cash Transactions, Sales and Income; Capital and Revenue Expenditure; Verification and Valuation of Assets; Verification of Liabilities; The Balance Sheet; Audit of the Limited Liability Company—Statutory Provisions, Legal Background, and Audit Procedure; The Dividend Fund of a Limited Company; The Audit of Partnership Accounts; Reports and Certificates; Audit Working Papers; Investigations; Special Features of Certain Audits.

